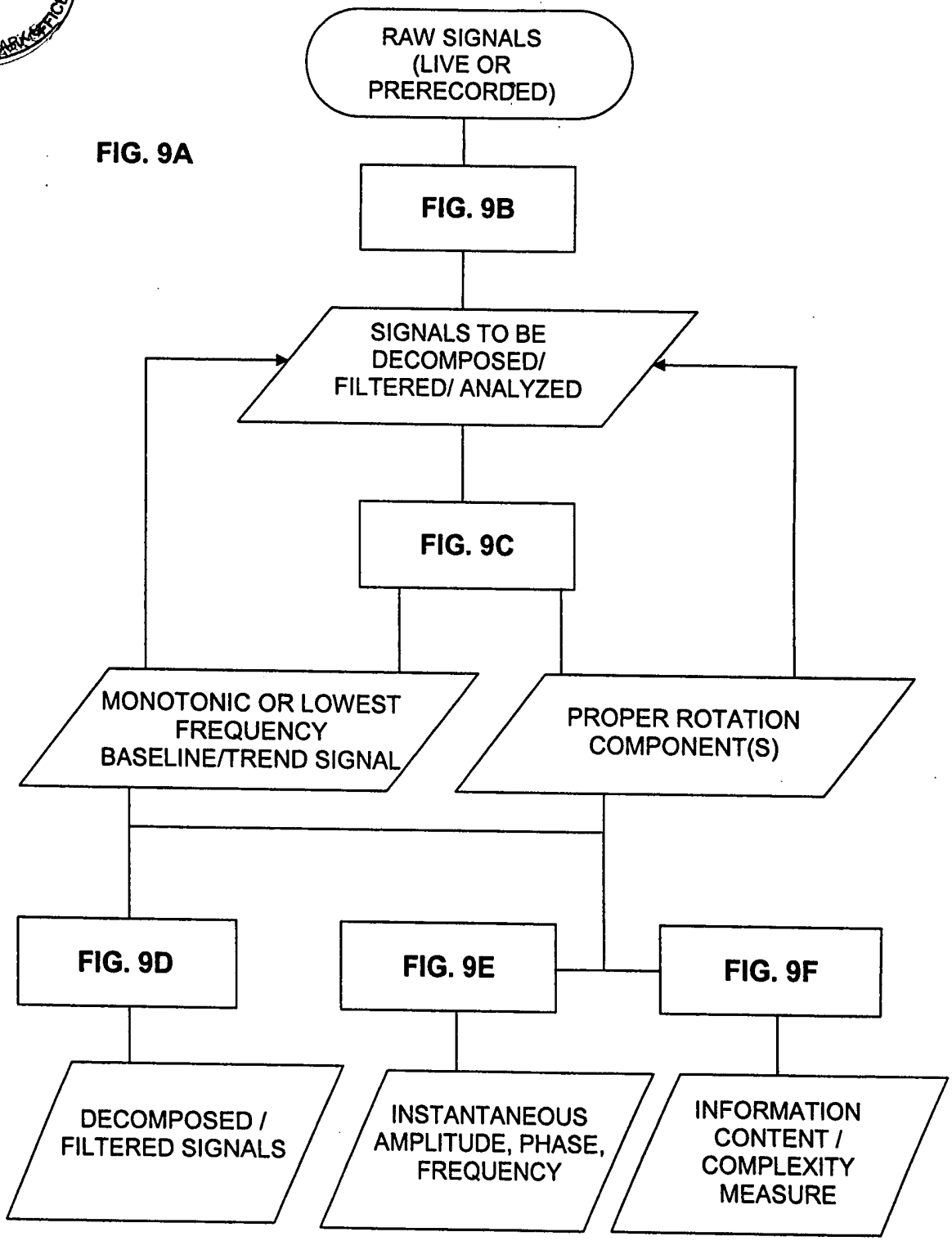
OIPE IAP54 SEP 06 2005 PATENT & TRADEMARK OFFICE

FIG. 9A



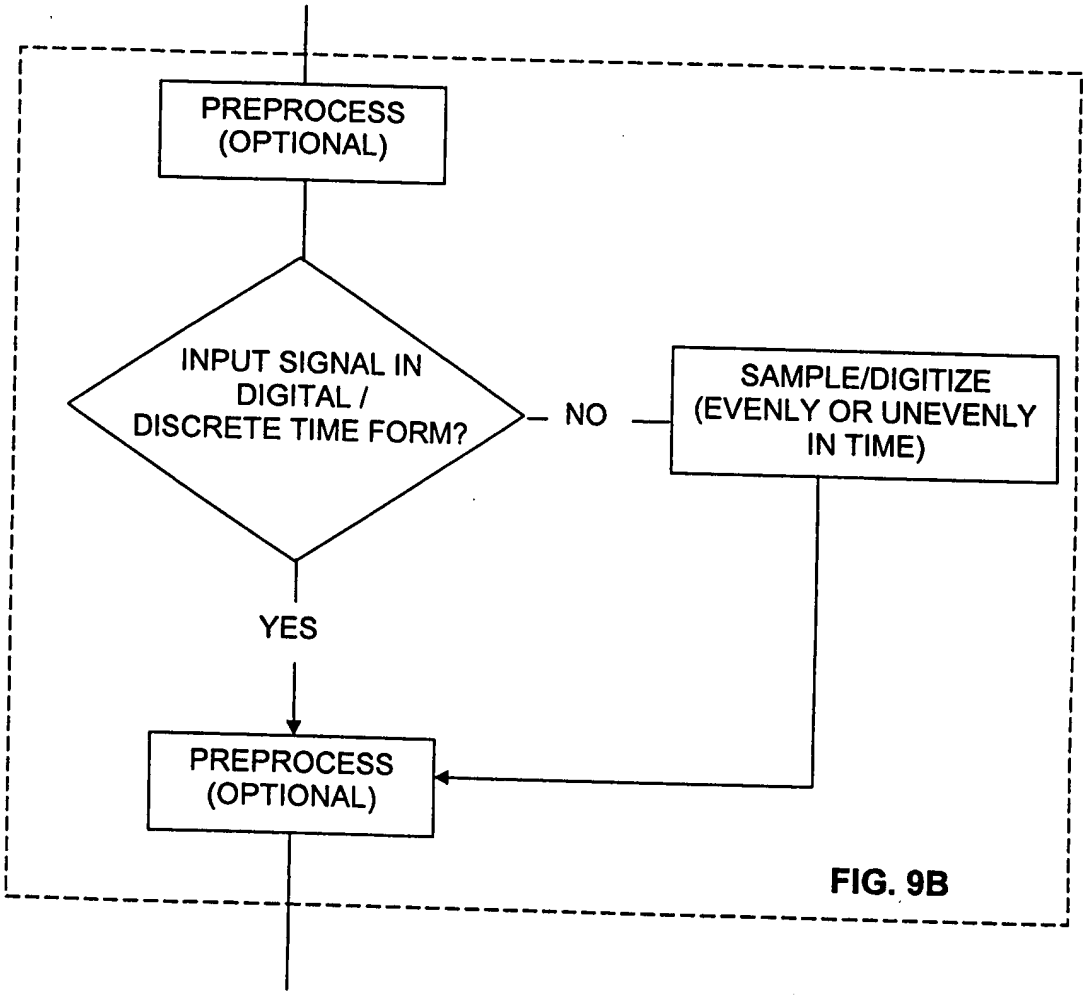
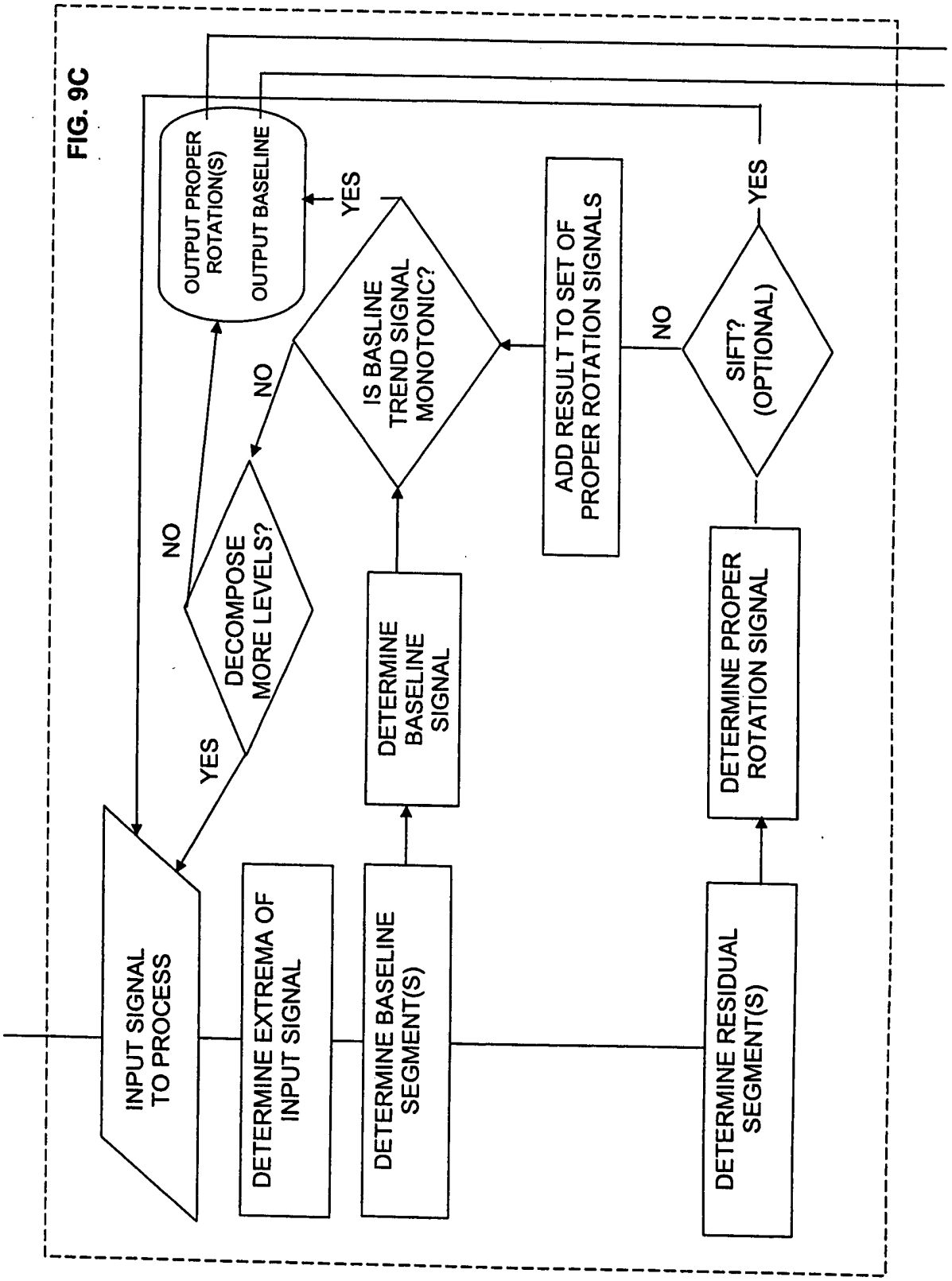

PREPROCESS
(OPTIONAL)
INPUT SIGNAL IN
DIGITAL /
DISCRETE TIME FORM?
NO
SAMPLE/DIGITIZE
(EVENLY OR UNEVENLY
IN TIME)
YES
PREPROCESS
(OPTIONAL)

FIG. 9B

FIG. 9C


INPUT SIGNAL TO PROCESS
DETERMINE EXTREMA OF INPUT SIGNAL
DETERMINE BASELINE SEGMENT(S)
DETERMINE RESIDUAL SEGMENT(S)
DETERMINE BASELINE SIGNAL
DETERMINE PROPER ROTATION SIGNAL
DECOMPOSE MORE LEVELS?
IS BASLINE TREND SIGNAL MONOTONIC?
SIFT? (OPTIONAL)
ADD RESULT TO SET OF PROPER ROTATION SIGNALS
OUTPUT PROPER ROTATION(S)
OUTPUT BASELINE
YES
NO
YES
NO
YES
NO

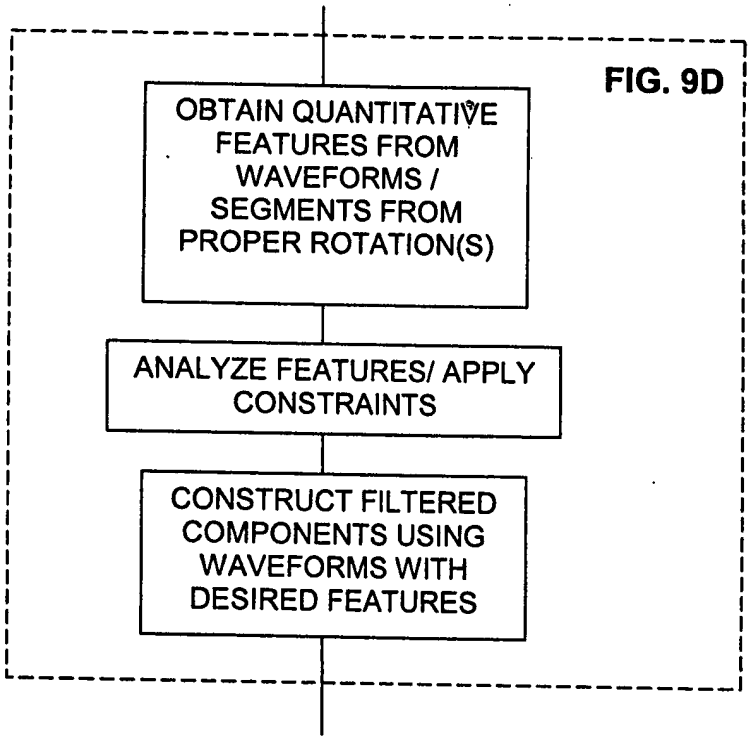

OBTAIN QUANTITATIVE FEATURES FROM WAVEFORMS / SEGMENTS FROM PROPER ROTATION(S)
ANALYZE FEATURES/ APPLY CONSTRAINTS
CONSTRUCT FILTERED COMPONENTS USING WAVEFORMS WITH DESIRED FEATURES

FIG. 9D

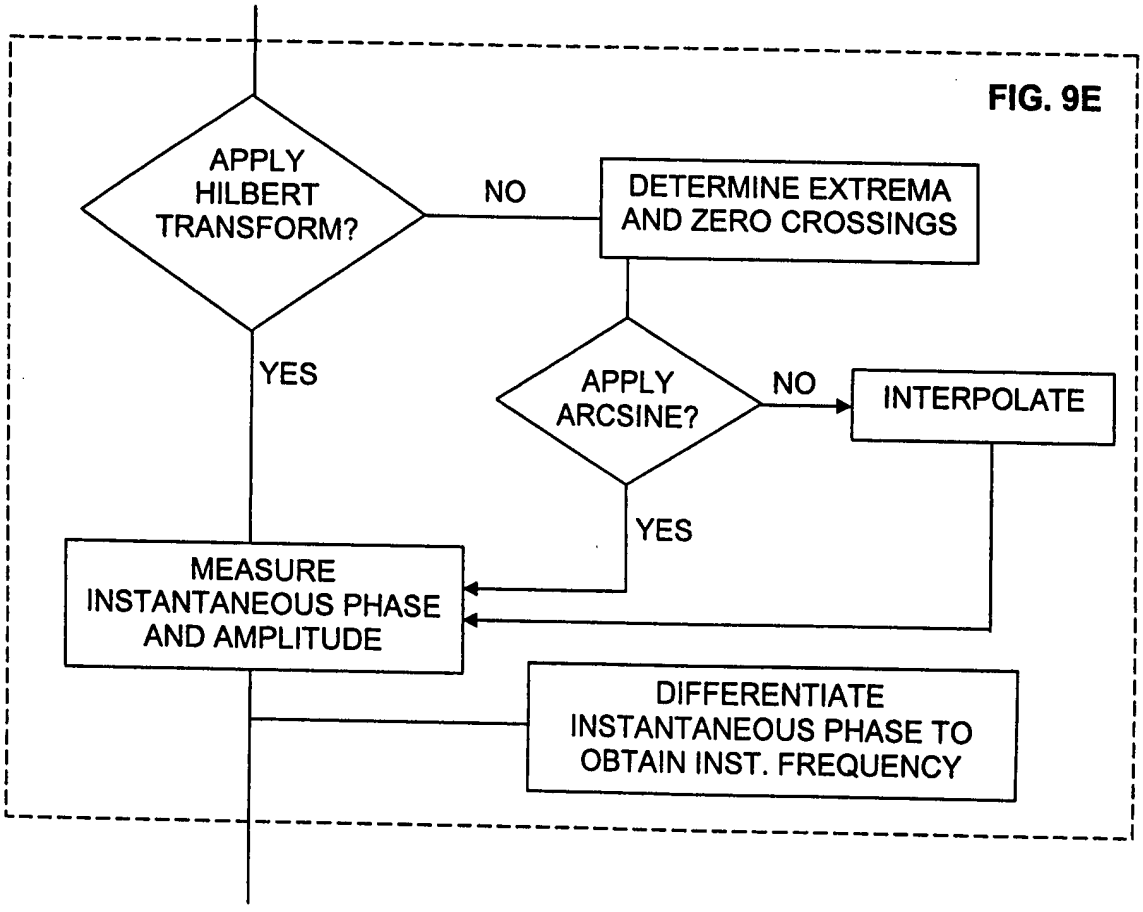

APPLY HILBERT TRANSFORM?
NO
DETERMINE EXTREMA AND ZERO CROSSINGS
YES
APPLY ARCSINE?
NO
INTERPOLATE
YES
MEASURE INSTANTANEOUS PHASE AND AMPLITUDE
DIFFERENTIATE INSTANTANEOUS PHASE TO OBTAIN INST. FREQUENCY

FIG. 9E

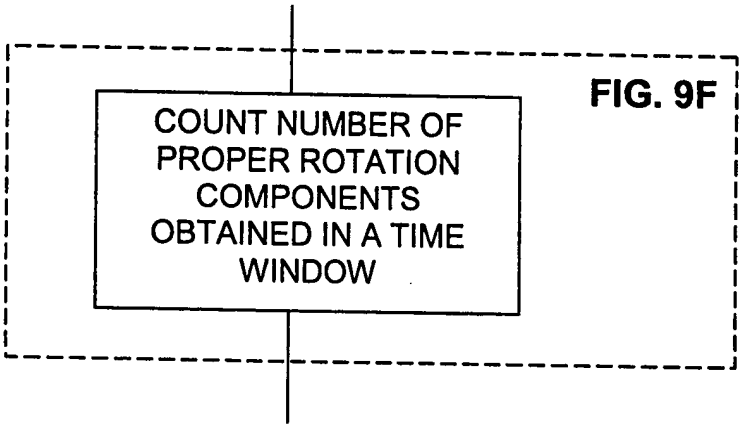

COUNT NUMBER OF PROPER ROTATION COMPONENTS OBTAINED IN A TIME WINDOW

FIG. 9F